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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,937	11/20/2001	William C. Black	X-933 US	1537

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EXAMINER	
WONG, LINDA	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/989,937	BLACK, WILLIAM C.	
	Examiner	Art Unit	
	Linda Wong	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,9-14 and 18-22* is/are pending in the application.

4a) Of the above claim(s) *6-8,15-17 and 23-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9-14 and 18-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments, see Applicant's Arguments, filed 3/12/2007, with respect to the rejection(s) of claims 1,10 under Anderson and claims 2-3,7-9,11-12,16-17 under Anderson in view of Nakayama et al have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Nakayama et al (US Patent No.: 4686686).
2. On page 7, the applicant argues "Nakayama, on the other hand, is unable to maintain a continuous connection at the input of amplifier 30, since switch 20 seems to be alternating opened and closed in response to the clock pulse $\phi 2$ (see Fig. 2 and column 2 line 68 to column 3 line 6), which is in contradiction to the Applicant's claims 1 and 10.
   a. The examiner respectfully disagrees. Based on the applicant's specification, paragraph 0014, the applicant discloses "A first circuit branch includes a switched capacitor that includes a switch 631 and capacitor 560. A second circuit branch includes a resistor 570 in series with capacitor 564 controlled by switch 633." As shown in Fig. 14, the input to the amplifier, label 580, is controlled by a switch, label 633. Based on the specification, Nakayama et al discloses the limitation as discussed. The rejection as stated below reflects the described invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-3,10-12** are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama et al (US Patent No.: 4686686).

   a. **Claim 1**,

      i. Nakayama et al discloses

         - "an amplifier having an output impedance and an input continuously coupled to receive an input signal, wherein the amplifier sources a transmission line;" (Fig. 2, label 30, wherein the capacitance and switches, labels 26-29,SW11-SW14 causes the input, In, to be continuously coupled to the input of the amplifier)
         - "a feed-forward circuit in parallel with the amplifier, wherein the feed-forward circuit compensates for transmission characteristics of the transmission line" (Fig. 2, labels 36-39,SW21-SW24 is in parallel to the amplifier and Col. 2, lines 30-43 discloses the equalizer as shown in Fig. 1, label 11 and Fig. 2 compensates for the data rate and line loss characteristics.)
         - "a feed-forward control module coupled to the feed-forward circuit to adaptively alter a property of the feed-forward circuit in response to at

least one characteristic of the transmission line" (Col. 2, lines 1-4, 30-43, 35-42) and

- "wherein the feed-forward circuit further comprises a plurality of switched capacitors in parallel with each other, wherein each one of the switched capacitors includes a capacitor in series with a switch and at least one of the plurality of switched capacitors is selectable based on a desired capacitance value to be placed in parallel with the output impedance" (Fig. 2 shows a plurality of switches and capacitors, wherein the switches are connected in series with the capacitors and the plurality of series connected switches and capacitors are connected in parallel. The switches are selectable depending on the control unit, Fig. 1, label 12.)

b. **Claims 2,11**, Nakayama et al discloses "a capacitance value of a capacitor of said plurality of switched capacitors is determined at least in part by a data transition rate". (Col. 2, lines 1-4, 30-43, 35-42)

c. **Claims 3,12**, Nakayama et al discloses "a capacitance value of a capacitor of said plurality of switched capacitors is determined based at least in part on a characteristic of said transmission line to which said output interface is electrically coupled". (Abstract, Col. 1, lines 9-44, 54-68, Col. 2, lines 1-4, 35-42)

d. **Claim 10**,

i. Nakayama et al discloses

- "a data processing module having an output" (Fig. 2, label Out1 as the output)
- "an amplifier having an input continuously coupled to the output of the data processing module, and an output" (Fig. 2, label 30, wherein the capacitance and switches, labels 26-29,SW11-SW14 causes the input, In, to be continuously coupled to the input of the amplifier)
- "a feed-forward circuit having an input coupled to the output of the data processing module and an output coupled to the output of the amplifier" (Fig. 2, labels 36-39,SW21-SW24 is in parallel to the amplifier and Col. 2, lines 30-43 discloses the equalizer as shown in Fig. 1, label 11 and Fig. 2 compensates for the data rate and line loss characteristics.)
- "a feed-forward control module coupled to the feed-forward circuit to adaptively select a capacitance value of the feed-forward circuit based on at least one characteristic of a transmission medium to which the device is electrically coupled" (Col. 2, lines 1-4, 30-43, 35-42) and
- "wherein said feed-forward circuit further comprises a plurality of switched capacitors in parallel with each other, wherein each one of the switched capacitors includes a capacitor in series with a switch and at least one switched capacitor of the plurality of switched capacitors is selectable based on a desired capacitance value to be placed in parallel with said amplifier". (Fig. 2 shows a plurality of switches and capacitors, wherein the switches are connected in series with the

capacitors and the plurality of series connected switches and capacitors are connected in parallel. The switches are selectable depending on the control unit, Fig. 1, label 12.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 4-5,13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al as applied to claims 1 and 10, respectively, in view of O'Neil et al (US Patent No.: 3886470).

   a. **Claims 4,13**, Nakayama et al fails to disclose "feed-forward circuit further comprises an amplifier in series with a capacitor". O'Neil et al discloses such a limitation. (Fig. 2, labels 11-22, 12 as the amplifier, 56 as the capacitor) It would have been obvious to one skilled in the art at the time of the invention to modify Nakayama et al in view of O'Neil et al to incorporate the "feed-forward circuit further comprises a resistive element in series with a capacitor" to provide a small correction to the phase characteristic of the delay path whose dominant effect occurs at low frequencies. (O'Neil et al, Col. 5, lines 46-48)

   b. **Claims 5,14**, Nakayama et al fails to disclose "feed-forward circuit further comprises a resistive element in series-with a capacitor". O'Neil discloses such

al limitation. (Fig. 2, label 11-22, 52 as the resistive element in series with capacitor, label 56) It would have been obvious to one skilled in the art at the time of the invention to modify Nakayama et al in view of O'Neil et al to incorporate the "feed-forward circuit further comprises a resistive element in series with a capacitor" to provide a small correction to the phase characteristic of the delay path whose dominant effect occurs at low frequencies. (O'Neil et al, Col. 5, lines 46-48)

5. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al as applied to claim 1, in view of Anderson (US Patent No.: 5493246).
   a. **Claim 9**, Nakayama et al fails to disclose "the property is one of a capacitance value and a resistance value". Anderson discloses such a limitation. (Col. 2, lines 30-39) It would have been obvious to one skilled in the art at the time of the invention to provide such a limitation as disclosed by Anderson in Nakayama et al's invention so to minimize leakage current. (Col. 1, lines 28-37)

6. **Claims 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al in view of Adam (US Patent No.: 3939437).
   a. **Claim 18**,
      i. With regard to claim 18, see rejection of claim 1.
      ii. Nakayama et al does not disclose a printed circuit board; a first device having an input; a second device having an output; an amplifier having an

input and an output, wherein the input of the amplifier is coupled to an output of the second device and the output of the amplifier is coupled to the input of the first device via the printed circuit board.

iii. Adam discloses in (Figs. 1, 2, 3 and 4) a printed circuit board (abstract); a first device having an input (14); a second device having an output (16); an amplifier (18) having an input and an output, wherein the input of the amplifier is coupled to an output of the second device (16) and the output of the amplifier is coupled to the input of the first device (14) via the printed circuit board (co1.1, lines 63-68 - col. 2, lines 1-6, col. 4, lines 31-34).

iv. It would have been obvious to one of ordinary skill in the art to modify Anderson in view of Adam to incorporate a printed circuit board; a first device having an input; a second device having an output; an amplifier having an input and an output, wherein the input of the amplifier is coupled to an output of the second device and the output of the amplifier is coupled to the input of the first device via the printed circuit board in order to compensate for the frequency-dependent attenuation of the delay line (Adam, abstract).

b. **Claim 19**, Nakayama et al discloses "a capacitance value of a switched capacitor of the plurality of switched capacitors is determined at least in part by a data transition rate". (Col. 2, lines 1-4, 30-43, 35-42)

c. **Claim 20**, Nakayama et al "a capacitance value of a switched capacitor of the said plurality of switched capacitors is determined based at least in part on a

characteristic of the printed circuit board to which the first device is electrically coupled". (Fig. 2, Abstract, Col. 1, lines 9-44, 54-68, Col. 2, lines 1-4, 35-42)

7. **Claims 21,22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al in view of Adam as applied to claim 18, in view of O'Neil et al (US Patent No.: 3886470).

   a. **Claim 21**, Nakayama et al fails to disclose "feed-forward circuit further comprises an amplifier in series with a capacitor". O'Neil discloses such al limitation. (Fig. 2, label 11-22, 52 as the resistive element in series with capacitor, label 56) It would have been obvious to one skilled in the art at the time of the invention to modify Nakayama et al in view of O'Neil et al to incorporate the "feed-forward circuit further comprises a resistive element in series with a capacitor" to provide a small correction to the phase characteristic of the delay path whose dominant effect occurs at low frequencies. (O'Neil et al, Col. 5, lines 46-48)

   b. **Claim 22**, Nakayama et al fails to disclose "feed-forward circuit further comprises a resistive element in series with a capacitor". O'Neil discloses such al limitation. (Fig. 2, label 11-22, 52 as the resistive element in series with capacitor, label 56) It would have been obvious to one skilled in the art at the time of the invention to modify Nakayama et al in view of O'Neil et al to incorporate the "feed-forward circuit further comprises a resistive element in series with a capacitor" to provide a small correction to the phase characteristic

of the delay path whose dominant effect occurs at low frequencies. (O'Neil et al, Col. 5, lines 46-48)

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong
5/21/2007

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